



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/593,876

09/22/2006

Philippe Robert

129533

5467

27049 7590 12/08/2009
OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER

THOMAS, BRADLEY H

ART UNIT

PAPER NUMBER

2835

NOTIFICATION DATE

DELIVERY MODE

12/08/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction27049@oliff.com
jarmstrong@oliff.com

Office Action Summary	Application No. 10/593,876	Applicant(s) ROBERT, PHILIPPE	
	Examiner BRADLEY H. THOMAS	Art Unit 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11 is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 12 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Acknowledgement is made of the amendment filed 8/7/09.

Election/Restrictions by Original Presentation

2. Newly submitted claim 12 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claim 12 is drawn to the embodiment shown in Figs. 8-9, wherein the flexure arms are configured in a different manner than in the embodiment shown in Figs. 5-7 (as claimed in claims 1-11).

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 12 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Objections

3. Claims 9-10 are objected to because of the following informalities:

In claim 9, line 2, it is believed that “membrane” should be changed to “contact arm” in light of the amendment to claim 1.

Furthermore, claim 10 seems redundant now in view of the amendment to claim 1 regarding the electrostatic holding means being secured to the contact arm.

Appropriate correction is required.

Art Unit: 2835

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dickens et al. (US 6,657,525) in view of Albarda et al. (US 5,029,805).

Regarding independent claim 1, Dickens et al. teaches a microswitch comprising:

- a deformable membrane (comprising 50 and 46) comprising at least two flexure arms (50) and at least one contact arm (46) arranged completely between the two flexure arms (50) (see Fig. 2A), the arms (50) being substantially parallel to each other in a first stable position (e.g. Fig. 2B), the membrane (comprising 50, 46) being physically attached to a substrate (44) by means of the flexure arms (50) by at least one of the ends of each flexure arm (50) (see Fig. 2A),
- the flexure arms (50) designed to deform, from the first stable position (e.g. Fig. 2B) of the microswitch to a second stable position (e.g. Fig. 2C) in such a way as to establish in the second stable position an electric contact between at least a first conducting pad (42) formed on the substrate (44) and at least a second conducting pad (64) arranged on the contact arm (46),
- the contact arm (46) being directly attached to each of said flexure arms (50) in high deformation areas (e.g. near 54, 55) of said flexure arms (50), the contact

Art Unit: 2835

arm (46) remaining substantially parallel to the substrate (44) and deforming less than the flexure arms (50) upon actuation of the microswitch (see Figs. 2B-C),

- and complementary electrostatic holding means (e.g. 60, 70 and 61, 71) respectively fixedly secured to the contact arm (46) and to the substrate (44) and designed to hold the microswitch in the second stable position of the membrane (see col. 4, lines 1-34).

except for:

- the flexure arms comprising actuating means designed to deform the flexure arms;
- the actuating means being disposed adjacent to the substrate on at least one of the ends of each flexure arm, the ends having the actuating means being on opposite sides of the contact arm.

However, Albarda et al. teaches a microstructure and that it is known to form actuating means (11, 12) on opposite ends of a flexure arm (3) adjacent to a substrate (1) in order to provide heating actuation (see col. 5, lines 28-52) for bending the arm (3) (see Fig. 2). It would have been obvious to one having ordinary skill in the switch art at the time the invention was made to have used actuating means on ends of flexible arms, since such a modification would have allowed for more precise and controlled actuation of the flexible arm. This would have improved the overall operation and switching of the switch.

Art Unit: 2835

Regarding claim 2, Dickens et al. alone teaches:

- the contact arm (46) supporting the electrostatic holding means (60, 61) is elongate (see Figs. 2A-C).

Regarding claim 3, Dickens et al. alone teaches:

- the two ends of the flexure arms (50) are fixedly secured to the substrate (44), the contact arm (46) being attached, via a central part (see Fig. 2B) thereof, to the flexure arms (50) at the level of their respective central parts (e.g. near 54, 55, see Fig. 2B).

Regarding claim 4, Dickens et al. alone teaches:

- each flexure arm (50) comprises a first end fixedly secured to the substrate (44) and a second end fixedly secured to the contact arm (46), the second ends of the two adjacent flexure arms (50) being respectively fixedly secured to opposite ends of the corresponding contact arm (46) (see Figs. 2A-C).

Regarding claims 5-6, Dickens et al. discloses the claimed invention except for:

- the actuating means of the microswitch comprise a thermal actuator;
- the thermal actuator comprises a heating resistor inserted in at least one end of the flexure arms.

However, Albarda et al. teaches a microstructure and that it is known to form actuating means (11, 12) on opposite ends of a flexure arm (3) adjacent to a substrate (1) in order

Art Unit: 2835

to provide heating actuation (see col. 5, lines 28-52) for bending the arm (3) (see Fig. 2). It would have been obvious to one having ordinary skill in the switch art at the time the invention was made to have used actuating means on ends of flexible arms, since such a modification would have allowed for more precise and controlled actuation of the flexible arm. This would have improved the overall operation and switching of the switch.

Regarding claim 7, Dickens et al. discloses the claimed invention except for:

- the actuating means of the microswitch comprise a piezoelectric actuator.

However, Albarda et al. also teaches that it is known to utilize a piezoelectric layer as part of the actuation member (see col. 5, lines 53-58) for a flexure arm (3). It would have been obvious to one having ordinary skill in the switch art at the time the invention was made to have used a piezoelectric actuating means, since it would have allowed for another degree of switch control, and thus improved the overall operation and switching of the switch.

Regarding claim 8, Dickens et al. discloses the claimed invention except for:

- the flexure arms are bimetal strips.

However, Albarda et al. also teaches that it is known to utilize a bimetal materials for the flexure arm (3) in a microstructure device (see col. 3, lines 31-39 and col. 5, lines 16-28). It would have been obvious to one having ordinary skill in the switch art at the time the invention was made to have used a bimetal materials, since such a modification

Art Unit: 2835

would have allowed for controlled bimetal deformation of the bending members. This would have allowed for another degree of switch control, and thus improved the overall operation and switching of the switch.

Regarding claim 9, as best understood, Dickens et al. alone teaches:

- the electrostatic holding means (60, 61, 70, 71) of the membrane (e.g. 50 and 46) comprise at least one electrode (see col. 4, lines 1-34).

Regarding claim 10, Dickens et al. alone teaches:

- the electrostatic holding means (60, 61, 70, 71) being at least attached to the contact arm (46).

Allowable Subject Matter

6. Claim 11 is allowed. Note that independent claims 11 and 12 were added as new independent claims in the latest amendment (8/7/09), and appear to be drawn to different embodiments of the invention (i.e. claim 11 is drawn to the embodiment in Figs. 5-7 and claim 12 is drawn to the embodiment in Figs. 8-9). Applicant is advised to consider issues related to restriction by original presentation in response to this office action as discussed above. As such, Claim 12 is currently withdrawn due to restriction by original presentation, however, if claims 1-11 were cancelled leaving only claim 12, claim 12 would be allowable on its own. Otherwise, claim 12 could be left withdrawn

Art Unit: 2835

(e.g. to be later cancelled) leaving only the embodiment of Figs. 5-7 claimed in claims 1-11, though claims 1-10 have been rejected with new art.

Regarding independent claim 11, it is believed that the prior art does not teach or suggest: “ A microswitch comprising a deformable membrane, the microswitch comprising: at least two flexure arms, each comprising two opposite ends, each end being directly attached to a substrate, at least one contact arm arranged between the at least two flexure arms, the contact arm being independently and directly attached to each of said flexure arms in a central part of said flexure arms, the contact arm remaining substantially parallel to the substrate and deforming less than the at least two flexure arms upon actuation of the microswitch, the at least two flexure arms and the contact arm being substantially parallel to each other in a first stable position, the flexure arm comprising actuating means disposed adjacent to the substrate designed to deform the flexure arms, from the first stable position of the microswitch to a second stable position in such a way to establish in the second stable position an electric contact between at least a first conducting pad formed on the substrate and at least a second conducting pad arranged on the contact arm, and complementary electrostatic holding means respectively fixedly secured to the membrane and the substrate and designed to hold the microswitch in the second stable position of the membrane.” (emphasis added).

Response to Arguments

7. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional 18 references (Gordon et al. (US 5,058,856)...Richards et al. (US 7,411,792)) on the PTO892 form teach microstructure switch devices.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2835

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRADLEY H. THOMAS whose telephone number is (571)272-9089. The examiner can normally be reached on 7:00am - 3:30pm (Eastern).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayprakash N. Gandhi can be reached on 571-272-3740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BHT

/Jayprakash N Gandhi/
Supervisory Patent Examiner, Art Unit 2835